Research Designs: Anecdotal Evidence

Anecdotal evidence is the simplest, most common and perhaps the least reliable source of evidence (page 42).

Anecdotal evidence consists of first or second hand reports of personal experience. Anecdotal evidence often is identified by the following phrases:

- In my experience…
- I've found that
- They say that
- It's common knowledge that…
- Everybody knows…

While there are many things that are commonly known that are correct, but there are many things that are commonly known that are not correct. Anecdotal evidence can be difficult to sort out the good from the bad evidence.

We may have a difficult time evaluating our own beliefs because we forget the sources of information, repeated beliefs just sound true, and we are motivated to believe that what we believe is correct.

Despite their limitations, anecdotes cannot be summarily dismissed. The provide useful leads (page 43).

Beliefs Can Interfere with the Interpretation of Evidence

The following claims take the form "Heads I win, tails you lose."

Conspiracy theories: Is the CIA hiding evidence?

(a) If we find the secret base, we knew the CIA was lying

(b) If we don't find the secret base, the CIA is just very good at concealing bases

Leeches' healing properties: Do leeches work?

(a) If the patient survives, leeches work

(b) If the patient dies, we didn't use enough or didn't use them early enough

The Japanese are sneaky: During WWII, were the Japanese sneaky and spying for mainland Japan?

(a) If we find the Japanese spying, they are sneaky

(b) If we don't find the Japanese spying, they are so sneaky we just haven't caught them yet.

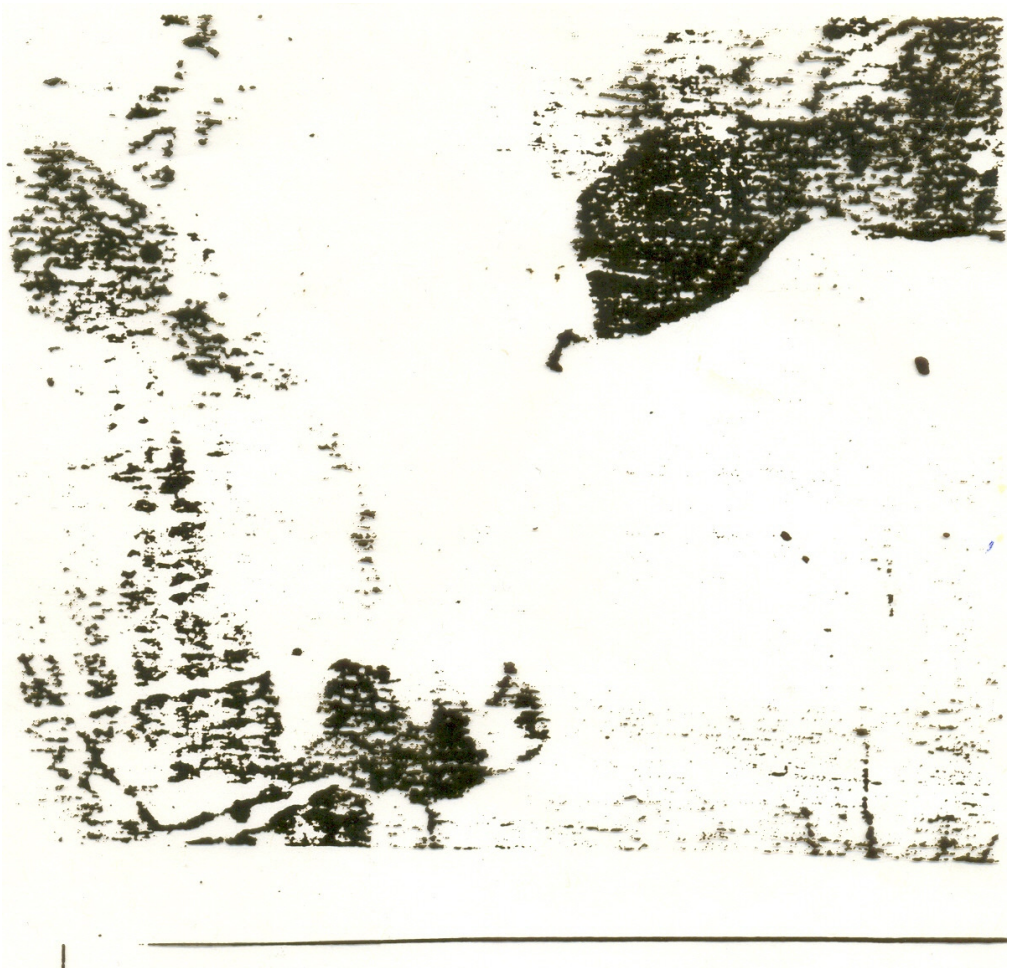
Beliefs Can Influence What you See and Don't See

Your beliefs can affect how you interpret "reality". Once you interpret "reality" through your beliefs, it is difficult to see alternative "realities".

What are examples where your beliefs about the world affect your interpretation of it?

- What are other examples where beliefs affect your interpretation of "reality"?
- Why is it important to realize that beliefs influence what you perceive?
- How do scientists reduce the problem of their own beliefs affecting their ability to be impartial?

Beliefs Influencing Interpretation of Information



If you have no idea what this image is, it is very difficult to see the picture.

However, once you know what you are suppose to look for,

- It is almost impossible to “unsee” the picture. Three months from now, you will probably see the image quickly
- It is almost impossible to imagine how you could not have seen the image before.

Problems with casually testing a belief

To illustrate how beliefs interfere with our ability to assess beliefs, I will use a common belief that women are bad drivers and show how the same process takes place when evaluating other beliefs.

When many people state this belief, they tend to commit three basic errors:

- Problem 1: People tend to search for evidence that tends to confirm their belief (the confirmation bias). They think of all the women they know that are bad drivers.
- Problem 2: People tend to use different criteria when evaluating evidence. Different criteria and explanations are used for the same behavior (belief-bias, chapter 7).
    - **He** ran the red light because he had no other choice.
    - **She** ran the red light because she was reckless.
- Problem 3: Disconfirming evidence is explained away. When one comes across a good driver who is a woman, people say "she isn't really a woman". This is common with racial stereotypes.

	Men	Women
Good Drivers		
Bad Drivers		Think of women who are bad drivers… Chris, Melanie, Lorna

Problems with Casually Testing Beliefs: We use different Standards for the Same Behavior

"Looted"

Associated Press AP - Tue Aug 30,11:31 AM ET

A young man walks through chest deep flood water after looting a grocery store in New Orleans on Tuesday, Aug. 30, 2005. Flood waters continue to rise in New Orleans after Hurricane Katrina did extensive damage when it

Email Photo Print Photo

RECOMMEND THIS PHOTO » Recommended Photos
Recommend It: Average (138 votes)

"Found"

AFP 3:47 AM ET

Two residents wade through chest-deep water after finding bread and soda from a local grocery store after Hurricane Katrina came through the area in New Orleans, Louisiana.(AFP/Getty Images/Chris Graythen)

Email Photo Print Photo

RECOMMEND THIS PHOTO » Recommended Photos
Recommend It: Average (211 votes)

RELATED

- Katrina's Effects, at a Glance AP - Tue Aug 30, 1:26 PM ET

Hurricanes & Tropical Storms

Problems with Casually Testing Beliefs: We use Different Standards for the Same Behavior

Applying Problems with Casually Testing Beliefs Broadly

These problems in casually testing a belief can lead to an <u>illusory correlation</u>.

	Free	Busy
Not in a hurry		
In a hurry		You think of all the times the bank machine is busy when you are in a hurry

	Good Policies	Bad Policies
Democrats		
Republicans		

Coincidences: Remarkable or random?

(www.csicop.org/si/9809/coincidence.html)

Some psuedosciences rely on "incredible coincidences" such as those between former Presidents Abraham Lincoln and John F. Kennedy?

- They both have seven letters in their last name.
- They were elected 100 years apart (1860 and 1960).

- They were assassinated on a Friday in the presence of their wives.
- Lincoln was killed in Ford's theater. Kennedy was killed in a Ford automobile.

- Both assassins went by three names (John Wilkes Both and Lee Harvey Oswald), which contain 15 letters.
- Oswald shot Kennedy from a warehouse and fled to a theater. Booth shot Lincoln in a theater and fled to a barn (a kind of warehouse).

- Both succeeding vice-presidents were southern Democrats and former senators named Johnson (Andrew and Lyndon) with 13 letters in their names and born 100 years apart (1808 and 1908).

Is this remarkable or random?

If we compare other relevant attributes, we fail to find coincidences.

- Lincoln and Kennedy were born and died in different months, dates, and states. None of these are 100 years apart.
- Their ages at death were different, as were the names of their wives.

For any two people, with reasonably eventful lives, it is possible to find a coincidence between them. These coincidences are <u>not</u> predicted in advance.

Experiments: Examining Cause and Effect

A method of investigation used to demonstrate cause-and-effect relationships by

- purposely manipulating a factor (the independent variable)
- to attempt to produce a change in a second factor (the dependent variable).

There must be at least two groups (an experimental and control group to compare).

Key concepts:

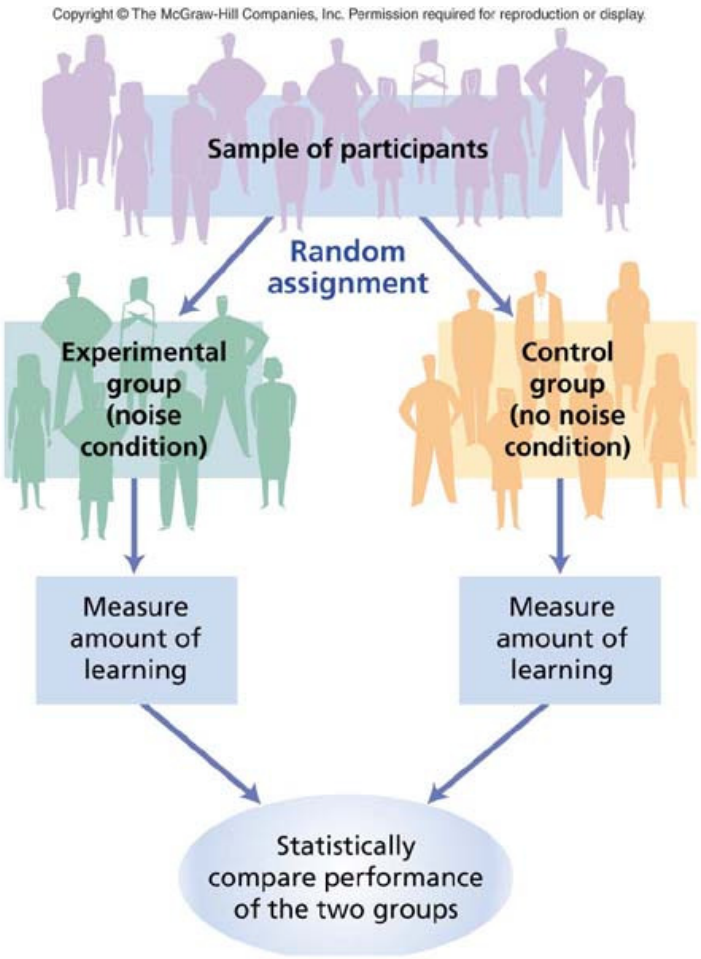
- Independent variables
- Dependent variables

- Between subjects experiments
  - Experimental group
  - Control group
- Matched samples

- Within subjects
  - AB design
  - ABA reversal design

Experiments: Examining Cause and Effect

- Hypothesis: Noise impairs learning



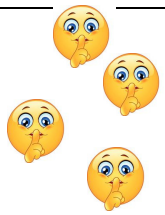
- Independent Variable: Amount of noise present when learning
- Dependent Variable: Amount of learning that took place

The above example is a between-subjects experiment (page 44). The difference in treatment (noise) is between groups of subjects / participants.

Experiments: Examining Cause and Effect

In the between subjects groups, the groups are different in the manipulation of the independent variable. One group of people (Sam, Sue, Sean, Sandy) get the noise condition where the other group of people (Trista, Tom, Tammy, Theodore) get the NO noise condition).

Between Subjects experiment

Noise Condition	No Noise Condition
• Sam • Sue • Sean • Sandy 	• Trista • Tom • Tammy • Theodore 

In the within subjects experiment, participant's behavior is observed before treatment (the baseline period), and then after the treatment.

Within subjects experiment (AB)

The independent variable varies within the participant.

- Sam baseline learning is measured (A)
- Sam is exposed to noise (the variable) and learning is measured (B)

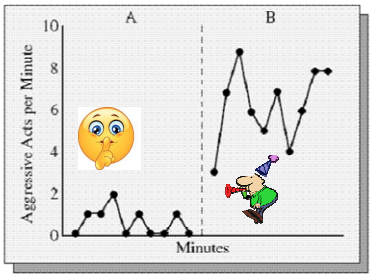


Figure 2-9 Within-subject design experiment. Number of times a child hit a stuffed animal each minute during a ten-minute baseline (A) and during an experimental intervention (B). (Hypothetical data.)

Within subjects experiment (ABAB)

- Sam learning is measured without noise (A)
- Sam is exposed to noise and learning is measured (B)
- Sam's noise level is reduced again and learning is measured (A)
- Sam is exposed to noise and learning is measured again (B)

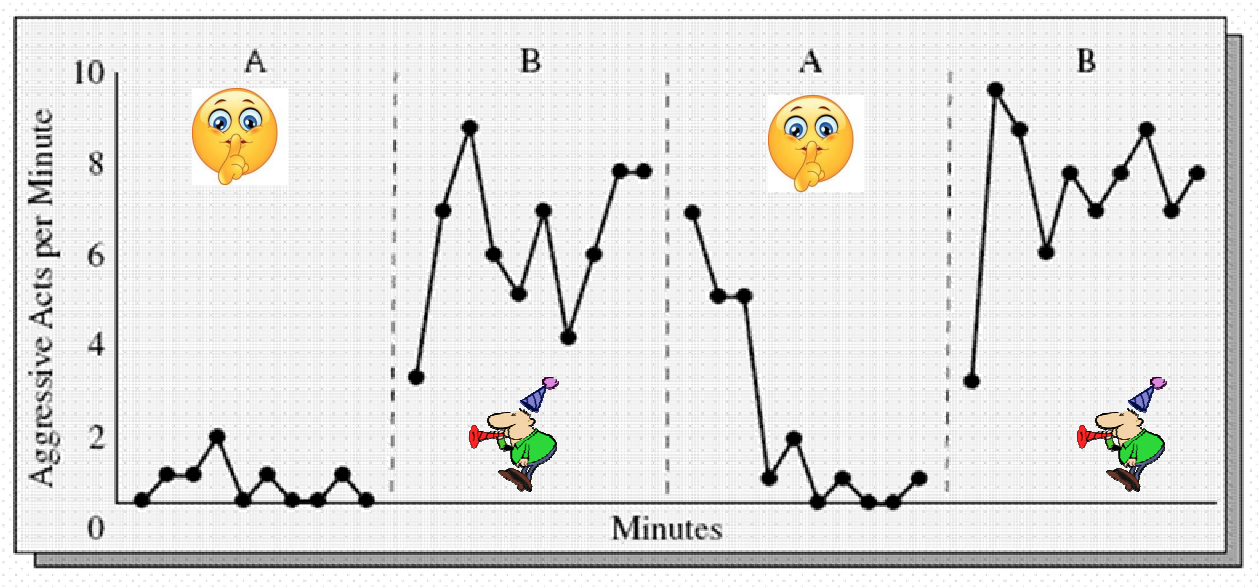


Figure 2-10 Within-subject design with reversal. A and B conditions can be repeated to verify the effect of the intervention. (Hypothetical data.)

This is like switching a light switch from off, to on, off, and on again.

Limits on experimental research

Experiments are useful in that they control over variables to rule out alternative explanations. Random assignment minimizes the effects of extraneous variables. Experiments manipulate a variable systematically and observes and measures if the change has any effect on behavior or thinking.

The tradeoff is that the read world has multiple variables operating on us (brother, sister, weather, thoughts about the future, presence of others, etc.). Experiments do not represent conditions that exist in the real-world. However, these artificial conditions allows psychologists to see the relationship between variables.